



ARIZONA DEPARTMENT OF HEALTH SERVICES

PREPAREDNESS



Foodborne Disease Outbreak Investigation Tabletop Exercise

Situation Manual—Facilitator's Version

July 18, 2017

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EXERCISE OVERVIEW

Exercise Name	Foodborne Disease Outbreak Investigation Tabletop Exercise
Exercise Dates	July 18, 2017
Mission Area(s)	Prevention, Protection, Mitigation, Response
Domains	Incident Management (2), Information Management (3), Countermeasures and Mitigation (4), Biosurveillance (6)
Objectives	<ol style="list-style-type: none"> 1. Determine a threshold for standing up an Emergency Operations Center (EOC). 2. Determine when to issue public information alerts, warnings, and notifications. 3. Identify which stakeholders should be incorporated into information flow. 4. Determine communication needs during a Zoonotic/Foodborne disease outbreak. 5. Determine the infection control measures that should be implemented. 6. Determine the precautionary protective measures associated with this zoonotic or foodborne outbreak that should be communicated to the public. 7. Coordinate administration of prophylactic medications. 8. Discuss epidemiologic clues indicative of a zoonotic or foodborne disease outbreak. 9. Determine the source of an outbreak. 10. Discuss prevention measures to be implemented to protect the public. 11. Describe the clinical features, epidemiology, and control. 12. Discuss how to determine the prevalence of a zoonotic or foodborne disease in an area. 13. Describe collection of appropriate specimens and proper handling of specimens. 14. Obtain and conduct confirmatory testing and analysis of clinical specimens at Arizona State Public Health Laboratory.
Threat or Hazard	Unknown Foodborne Illness
Scenario	Unknown Foodborne Illness

Sponsor	Arizona Department of Health Services
Participating Organizations	State and local public health, environmental health, epidemiology staff, tribal partners, federal and state food safety partners, laboratorians, hospital staff and public information officers
Point of Contact	Mackenzie Tewell, MA, MPH, CPH Foodborne Epidemiologist Arizona Department of Health Services 150 N. 18 th Ave Suite 140 Phoenix, AZ 85007 (480) 662-0524 Mackenzie.Tewell@azdhs.gov

PREFACE

The Foodborne Outbreak Investigation (TTX) 2017 is sponsored by the Arizona Department of Health Services (ADHS). This Situation Manual (SITMAN) was produced with input, advice, and assistance from the Infectious Diseases Epidemiology TTX 2017 Exercise Planning Team, which followed the guidance set forth in the Federal Emergency Management Agency (FEMA) and the Homeland Security Exercise and Evaluation Program (HSEEP).

The SITMAN gives officials, observers, and players from participating organizations the information necessary to observe or participate in a healthcare exercise focusing on participants' emergency response plans, policies, and procedures as they pertain to their preparedness and response capabilities. The information in this document is current as of the date of publication, **July 18, 2017**, and is subject to change as determined by the Infectious Diseases Epidemiology TTX 2017 Exercise Planning Team.

The Foodborne Outbreak Investigation TTX 2017 is an *unclassified exercise*. The control of information is based more on public sensitivity regarding the nature of the exercise than on the actual exercise content. Some exercise material is intended for the exclusive use of exercise planners, facilitators, and evaluators, but players may view other materials deemed necessary to their performance. The SITMAN may be viewed by all exercise participants.

All exercise participants should use appropriate guidelines to ensure the proper control of information within their areas of expertise and to protect this material in accordance with current jurisdictional directives. Public release of exercise materials to third parties is at the discretion of ADHS.

This SITMAN and TTX were supported by the U.S. Department of Health and Human Services (HHS), Office of the Assistant Secretary for Preparedness and Response (ASPR), Office of Preparedness and Emergency Operations (OPEO), Division of National Healthcare Preparedness Programs (NHPP) HPP Cooperative Agreement Catalog of Federal Domestic Assistance (CFDA) number 93.889. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of HHS.

ADMINISTRATIVE HANDLING INSTRUCTIONS

1. The title of this document is the *Foodborne Disease Outbreak Investigation Tabletop Exercise*.
2. The material provided in this report contains information that is *For Official Use Only*, or types of sensitive but unclassified information requiring protection against unauthorized disclosure. This document should be safeguarded, handled, transmitted, and stored in accordance with appropriate security directives governing protection and dissemination of such information. Reproduction of this document, in whole or in part, without prior approval from ADHS is prohibited.
3. At a minimum, the attached materials will be disseminated only on a need-to-know basis and, when unattended, will be stored in a locked container or area offering sufficient protection against theft, compromise, inadvertent access, and unauthorized disclosure.
4. Exercise Planning Point of Contact:

Exercise Director

Mackenzie Tewell, MA, MPH, CPH
Foodborne Epidemiologist
Arizona Department of Health Services
150 N. 18th Ave Suite 140
Phoenix, AZ 85007
(480) 662-0524
Mackenzie.Tewell@azdhs.gov

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JULY, 18, 2017 FOODBORNE TABLETOP AGENDA

8:00AM - 9:00AM	Registration
9:00AM - 9:15AM	Welcoming remarks & exercise overview and briefing (Black Canyon Room) Mackenzie Tewell, ADHS
9:20AM – 10:30AM	Module 1 (breakout rooms) <i>Introductions</i> <i>Topics: responding to outbreak reports, differential diagnosis, exploring enteric disease pathogens, case definitions, obtaining line lists</i>
10:30AM – 10:40AM	Break
10:40AM – 11:40AM	Module 2 (breakout rooms) <i>Topics: confirming an outbreak, case finding, outbreak case definitions, creating and using questionnaires</i>
11:40AM – 12:40PM	Lunch (Black Canyon Room) Hepatitis A presentation, Maricopa County
12:40PM – 12:55PM	Large group brief back and questions/comments (Black Canyon Room)
1:00PM – 2:35PM	Module 3 (breakout rooms) <i>Topics: environmental inspections, coordination with partners, product sampling</i>
2:35PM – 2:50PM	Break
2:50PM – 4:25PM	Module 4 (breakout rooms) <i>Topics: prevention, contact management, communication, messaging</i>
4:30PM – 5:00PM	Large group brief back, questions/comments, and evaluation (Black Canyon Room)
5:00 PM	Adjourn

Note: Agenda is subject to change if necessary

GENERAL INFORMATION

Introduction

This Foodborne Disease Outbreak Investigation Tabletop Exercise (TTX) is designed to establish a learning environment for local health departments and community partner participants to exercise their outbreak plans, policies, and procedures. To ensure an effective exercise, subject matter experts (SMEs) and representatives from numerous state and local agencies have taken part in the planning process and will participate in the exercise conduct and evaluation. This Situation Manual (SITMAN) was produced at the direction of the Arizona Department of Health Services (ADHS) with the input, advice, and assistance of the Infectious Diseases Epidemiology TTX 2017 Exercise Planning Team.

Confidentiality

The Foodborne Disease Outbreak Investigation Tabletop Exercise is an unclassified exercise. Control of exercise information is based on public sensitivity regarding the nature of the exercise rather than the actual exercise content. Some exercise material is intended for the exclusive use of exercise planners, controllers, simulators, and evaluators, but players may view other materials deemed necessary to their performance.

All exercise participants should use appropriate guidelines to ensure the proper control of information within their areas of expertise and protect this material in accordance with current ADHS directives.

Any inquiries concerning the authorized use of this document or any other exercise-related materials should be directed to the Exercise Director, Mackenzie Tewell (see contact information above).

Purpose

The purpose of the ADHS sponsored Foodborne Disease Outbreak Investigation Tabletop Exercise is to evaluate the public health response to a foodborne outbreak.

Exercise Objectives and Core Capabilities

The following exercise objectives in Table 1 describe the desired outcomes for the exercise. The objectives are linked to core and preparedness capabilities, which are distinct critical elements necessary to achieve the specific mission area(s). The objectives and aligned core capabilities were selected by the Exercise Planning Team.

Domain	Activities	Objectives
Domain 2: Incident Management	Emergency Operations Coordination Emergency operations coordination is the ability to direct and support an event or incident with public health or medical implications by establishing a standardized, scalable system of oversight, organization, and supervision consistent with jurisdictional standards and practices and with the National Incident Management System.	<ul style="list-style-type: none"> ➤ Determine a threshold for standing up an Emergency Operations Center (EOC).
Domain 3: Information Management	Emergency Public Information and Warning Emergency public information and warning is the ability to develop, coordinate, and disseminate information, alerts, warnings, and notifications to the public and incident management responders.	<ul style="list-style-type: none"> ➤ Determine when to issue public information alerts, warnings, and notifications.
	Information sharing Information sharing is the ability to conduct multijurisdictional, multidisciplinary exchange of health-related information and situational awareness data among federal, state, local, territorial, and tribal levels of government, and the private sector. This capability includes the routine sharing of information as well as issuing of public health alerts to federal, state, local, territorial, and tribal levels of government and the private sector in preparation for, and in response to, events or incidents of public health significance.	<ul style="list-style-type: none"> ➤ Identify which stakeholders should be incorporated into information flow. ➤ Determine communication needs during a Zoonotic/Foodborne disease outbreak.
Domain 4: Countermeasures and Mitigation	Non-pharmaceutical interventions Non-pharmaceutical interventions are the ability to recommend to the applicable lead agency (if not public health) and implement, if applicable, strategies for disease, injury, and exposure control.	<ul style="list-style-type: none"> ➤ Determine the infection control measures that should be implemented. ➤ Determine the precautionary protective measures associated with this zoonotic or foodborne outbreak that should be communicated to the public.

Domain	Activities	Objectives
Domain 4: Countermeasures and Mitigation, continued	<p>Medical Countermeasure Dispensing</p> <p>Medical countermeasure dispensing is the ability to provide medical countermeasures (including vaccines, antiviral drugs, antibiotics, antitoxin, etc.) in support of treatment or prophylaxis (oral or vaccination) to the identified population in accordance with public health guidelines and/or recommendations.</p>	<ul style="list-style-type: none"> ➤ Coordinate administration of prophylactic medications.
Domain 6: Biosurveillance	<p>Public Health Surveillance and Epidemiological Investigation</p> <p>Public health surveillance and epidemiological investigation is the ability to create, maintain, support, and strengthen routine surveillance and detection systems and epidemiological investigation processes, as well as to expand these systems and processes in response to incidents of public health significance.</p>	<ul style="list-style-type: none"> ➤ Discuss epidemiologic clues indicative of a zoonotic or foodborne disease outbreak. ➤ Determine the source of an outbreak. ➤ Discuss prevention measures to be implemented to protect the public. ➤ Describe the clinical features, epidemiology, and control. ➤ Discuss how to determine the prevalence of a zoonotic or foodborne disease in an area.
	<p>Public Health Laboratory Testing</p> <p>Public health laboratory testing is the ability to conduct rapid and conventional detection, characterization, confirmatory testing, data reporting, investigative support, and laboratory networking to address actual or potential exposure to all-hazards. Hazards include chemical, radiological, and biological agents in multiple matrices that may include clinical samples, food, and environmental samples (e.g., water, air, and soil). This capability supports routine surveillance, including pre-event or pre-incident and post-exposure activities.</p>	<ul style="list-style-type: none"> ➤ Describe collection of appropriate specimens and proper handling of specimens. ➤ Obtain and conduct confirmatory testing and analysis of clinical specimens at Arizona State Public Health Laboratory.

Table 1. Exercise Objectives and Associated Core and Preparedness Domains and Capabilities

Exercise Assumptions and Artificialities

In any exercise, assumptions and artificialities may be necessary to complete play in the time allotted and/or account for logistical limitations. Exercise participants should accept that assumptions and artificialities are inherent in any exercise, and should not allow these considerations to negatively impact their participation. During this exercise, the following apply:

- The exercise is conducted in a no-fault learning environment wherein capabilities, plans, systems, and processes will be evaluated.
- The exercise scenario is plausible, and events occur as they are presented.
- All players receive information at the same time.

Participant Roles and Responsibilities

The term *participant* encompasses many groups of people, not just those playing in the exercise. Groups of participants involved in the exercise, and their respective roles and responsibilities, are as follows:

- **Players.** Players are personnel who have an active role in discussing or performing their regular roles and responsibilities during the exercise. Players discuss or initiate actions in response to the simulated emergency.
- **Facilitators.** Facilitators provide situation updates and moderate discussions. They also provide additional information or resolve questions as required. Key Exercise Planning Team members also may assist with facilitation as subject matter experts (SMEs) during the exercise.
- **Evaluators.** Evaluators are assigned to observe and document certain objectives during the exercise. Their primary role is to document player discussions, including how and if those discussions conform to plans, policies, and procedures.
- **Observers.** Observers do not directly participate in the exercise. However, they may support the development of player responses to the situation during the discussion by asking relevant questions or providing subject matter expertise.

Exercise Structure

This exercise will be a discussion-based, facilitated exercise. Players will participate in the following four modules:

- Module 1: Identifying an outbreak
- Module 2: Conducting an epidemiological investigation
- Module 3: Collaborating with environmental health
- Module 4: Prevention, messaging and communication

Each module begins with an update that summarizes key events occurring within that time period. After the updates, participants review the situation and engage in a group discussion of appropriate response issues.

Exercise Ground Rules

The following exercise ground rules have been developed to ensure that the objectives are met in a reasonable amount of time and that the TTX runs smoothly.

- Keep the exercise's objectives in mind throughout the exercise.
- Treat the scenario incidents as real events. Play your appropriate role.
- Participate openly and focus discussions on appropriate topics. Asking questions, sharing thoughts, and offering forward-looking, problem-solving suggestions are strongly encouraged, as these actions will enhance the exercise experience.
- Keep your comments focused and consider the time constraints. The discussions will explore policies, decisions, actions, and key relevant issues, which will require participants to respect the observations, opinions and perspectives of others.
- Issues and procedures flowing from each module presented will be discussed.
- After reviewing each scenario, participants will have a few minutes to answer each question and consider the appropriate processes, decisions, and courses of action. Following this, a facilitated general discussion of response issues and actions related to this scenario will be conducted.

Exercise Guidelines

- This exercise will be held in an open, low-stress, no-fault environment. Varying viewpoints, even disagreements, are expected.
- Respond to the scenario using your knowledge of current plans and capabilities (i.e., you may use only existing assets) and insights derived from your training.
- Decisions are not precedent setting and may not reflect your organization's final position on a given issue. This exercise is an opportunity to discuss and present multiple options and possible solutions.
- Issue identification is not as valuable as suggestions and recommended actions that could improve response efforts. Problem-solving efforts should be the focus.

Exercise Control

The exercise will be controlled and guided by the facilitator. The facilitated TTX uses a scenario-based approach to create the decision-making environment for participants to act in their potential operational roles. This is a no-fault exercise that focuses on the identification and analysis of issues of common concern.

During the TTX, an objective facilitator will lead participants through the activities surrounding the scenarios. The facilitator is responsible for keeping discussions on track with exercise objectives and ensuring that all issues are explored (time permitting).

Exercise Evaluation

Exercise evaluation is an essential element of a successful exercise program. A good evaluation is part of a progressive exercise program where exercises are planned, conducted, and evaluated as building blocks to competency in incident management for the long-term. The evaluation portion of the exercise program is aligned with the established program metrics.

Evaluations provide an objective assessment of the participants' discussions. They have been designed to support an assessment of exercise objectives and capabilities. The goal of evaluation is to validate strengths and identify opportunities for improvement among participating organizations. Evaluations help to identify ways to build on strengths and improve capability. The evaluation methodology for this TTX focuses on the adequacy of and familiarity with the jurisdiction's plans, policies, procedures, resources, and interagency/inter-jurisdictional relationships that support the performance of critical tasks required to respond to a foodborne outbreak.

During the TTX, an evaluation team will be listening for themes in discussion and issues. These issues will then be reviewed during the hot wash. Lessons learned during the exercise will allow participants to update their current response plans and strategies as needed.

MODULE 1

Part 1: A call about a cluster

Facilitator: *Provide participants with a blank calendar (handout 1).*

July 18, 2017

Arizona Refugee Center (ARC), a local organization that provides resettling services (but no live-in housing) to refugees across the state of Arizona, has contacted your local health jurisdiction reporting several cases of nausea, vomiting and fever. Two cases have been hospitalized. The first illnesses began on Sunday, July 16. The refugee agency is located in a large county, but refugees live in various Arizona counties. This organization serves refugees originating from numerous countries, the majority of which are African countries.

Question 1: Is this something you would investigate further? Why or why not? [Domain 6: Biosurveillance]

Answers:

- *Yes: [Preferred answer]*
 - *More than one person (likely from different households) is ill*
 - *They all potentially have a common exposure (i.e., food, activities, country of origin).*
 - *Hospitalizations indicate a potentially serious illness.*
- *No:*
 - *You do not have lab data indicating the cause of illness. [Note: just because a case is hospitalized does not mean lab tests were ordered.]*
 - *Reminder to participants: regardless of diagnoses, this call represents a cluster of illness in a group with common exposures.*

Question 2: What additional information would you need or want? [Domain 6: Biosurveillance]

Answers:

- *Line list of ill persons.*
- *Number of refugees served and staff members employed.*
- *Any available health/vaccination/titer records from initial refugee health screenings.*
- *Additional information about activities that take place at the refugee facility.*
- *Whether any lab results have come back.*
- *If any others were ill prior to this cluster.*
- *What, if any, measures have they put in place so far in response to the illnesses.*

You call back for additional information. The director of ARC tells you that the first person sick is a man who recently arrived from Sudan. You also learn that he and his daughter became ill three to four days after their weekly Friday potluck held at ARC. The food is typically prepared in the homes of refugees and transported to a meeting room at ARC. Unfortunately, there is no one potluck organizer.

Question 3: How does a potluck complicate your investigation? Is it even legal to serve foods prepared in private homes? [Domain 6: Biosurveillance]

Answers:

Potlucks are challenging because there is not a menu listing all foods served. Food items may be prepared in many different places by people without food safety training. It is possible that multiple versions of the same item were served (example: three people each brought potato salad).

Yes, it is legal to have a potluck where people bring food prepared at home to share, provided that payment for food is not required.

The director provides you with a line list, but it only contains information about the two people who are hospitalized, who happen to be father and daughter living in the same household.

Patient ID	Age	Gender	Onset Date	Symptoms
A	22	F	7/18/2017	vomiting, fever
B	46	M	7/17/2017	vomiting

Question 4: Is this line list sufficient to make next steps? What other information would you request? [Domain 6: Biosurveillance]

Answers:

- *Get a more complete line list with all ill persons.*
- *Additional exposures (Travel, animal contact, shared meals).*
- *Contact information.*
- *Country of origin.*
- *Date of arrival to the US.*
- *Language(s) spoken.*
- *Dates of birth.*
- *County of residence.*

You call the ARC director to obtain a more complete line list, with all symptomatic individuals, not just those who are hospitalized. In addition, you request information about country of origin, date of arrival in the U.S., and onset dates. You find out that there are ill refugees living in your county.

Name	Age	Gender	Onset Date	Symptoms	County of origin	Arrival date in the U.S.	Hospital
Patient A	22	F	7/18/17	Vomiting, fever	Sudan	1/28/2017	Hospital A
Patient B	46	M	7/17/17	Vomiting	Sudan	4/28/2017	Hospital A
Patient C	30	M	7/18/17	Fatigue, fever, abdominal pain	Somalia	1/27/2016	Not Hospitalized
Patient D	60	F	7/17/17	Vomiting and diarrhea	Somalia	5/6/2005	Not Hospitalized
Patient E	55	F	7/17/17	fever, abdominal pain, vomiting	Democratic Republic of Congo	4/21/2010	Not Hospitalized
Patient F	50	M	7/18/17	fever, abdominal pain	Sudan	2/5/2008	Not Hospitalized

In the meantime, you call the infection preventionist at Hospital A and leave a voicemail requesting additional information about patients A and B.

Part 2: Differential diagnosis

Facilitator: *Provide participants with the reference table of common enteric illnesses (handout 2).*

Question 5: What is your hypothesis about the cause of these illnesses? Why? [Domain 6: Biosurveillance]

Answers:

- *Participants will likely assume the potluck on Friday, July 14, 2017 is the source of the infection. This means they are looking for illnesses with a 3-4 day incubation period.*
 - *Campylobacter*
 - *Unlikely; diarrhea would be the predominant symptom.*
 - *Salmonella*
 - *Unlikely; diarrhea would be the predominant symptom.*
 - *Shiga toxin-producing E. coli*
 - *Unlikely; STEC is known for causing bloody diarrhea.*
 - *Norovirus*
 - *Unlikely; the incubation period for norovirus is shorter, ~12-36 hours.*
 - *Hepatitis A*
 - *Unlikely, assuming the participants believe the refugees became sick from the most recent potluck, on Friday, July 14. Some may guess that these illnesses are due to an event that occurred earlier than this potluck. This may bring up discussion of asking questions about other common exposures among these cases.*
 - *Cryptosporidium*
 - *Unlikely; watery diarrhea would be expected.*
 - *Shigella*
 - *Unlikely; watery diarrhea would be expected.*
 - *Salmonella Typhi (typhoid fever)*

Inject: The IP returns your call. They performed a BioFire GI panel and all results were negative.

Facilitator: *Provide participants with the BioFire GI panel results (handout 3).*

No other results are available yet. Blood tests were ordered, but there was a mix up at the lab and it is anticipated that results won't be available for another day.

Question 6: What recommendations do you provide to the refugee agency given what you know at this time? [Domain: 4: Countermeasures and Mitigation]

Answers:

- *Continue to report ill individuals to their local health jurisdiction.*
- *Sick individuals are encouraged to stay home in order to prevent further spread of illness.*
- *Sick individuals should not participate in food preparation.*
- *Check to see if there are any individuals in the community who are high risk (young, old, immunocompromised, those with chronic liver diseases).*
- *Increased frequency of sanitizing using a freshly prepared bleach solution.*
- *Hand washing with soap and water for at least 20 seconds. An alcohol-based hand sanitizer should be used if hand washing isn't possible.*
- *Sick individuals should visit a medical provider for evaluation and/or testing.*

Part 3: A clearer picture

Over the next two days, your local health department receives bloodwork results for both of the hospitalized cases, who are father and daughter. Both results appear the same, shown below.

Hepatitis A IgM Ab, S		
Source: Serum		
Hepatitis A IgM Ab, S	A	Positive
		Negative
<p>False-positive results are possible from this assay. Test result should be correlated with medical history and clinical findings. Follow-up testing with Hepatitis A Total Antibodies, Serum is recommended at least 30 days later for retrospective confirmation of acute hepatitis A.</p> <p>SEMI-URGENT RESULT</p>		

Facilitator: Provide participants with the hepatitis A investigation manual and refer them to pages 1-2 to read about hepatitis A (handout 4). Allow a couple of minutes, if needed, for participants to review.

Question 7: Based upon the resources you've read, what information do you need to determine whether the cases meet the case definition? Note: The case definition for hepatitis A is on page 3 of the investigation manual. [Domain 6: Biosurveillance]

Answers:

- Symptoms or hospital chief complaint.
- Onset date.
- Liver function test results, if available.
- Vaccination history, if available.
- Results from other hepatitis testing.

Facilitator: Provide participants with hepatitis A management timeline (handout 5).

The **infectious period** (sometimes called the communicable period) is the time frame during which a case is able to spread disease to others. For hepatitis A, the infectious period is two weeks before illness onset until one week after jaundice onset, or two weeks after initial symptom onset if jaundice is not present.

Incubation period answers the question, “Once the pathogen gets into my body, how much time passes before I start showing symptoms?” The reason to calculate the incubation period is to help determine what the pathogen could be. This is helpful during outbreak investigations with an unknown pathogen but with a known date of exposure. Investigators often calculate the incubation period (usually in hours or days) for each case, then report a minimum, maximum, and mean incubation period for the outbreak. This can help rule in or rule out potential pathogens. To calculate the incubation period, you need to know the date of exposure and the onset date.

For known pathogens, the incubation period is reported as a window of time that typically passes between the date of exposure and the onset date for that particular pathogen. This window of time is used to calculate the **period of exposure** when the date of exposure is unknown.

For hepatitis A, the average incubation period is 28-30 days (range 15-50 days).

Remember: Potential exposures DO NOT OCCUR during the incubation period.

Period of exposure answers the question in reverse: “If my symptoms started today, how long ago did I first get infected with the pathogen?” The reason to calculate the period of exposure is to determine when the exposure might have occurred. This is helpful during outbreak investigations with a known pathogen but unknown exposure. Investigators can use the pathogen’s incubation period to calculate a range of time in which the exposure might have occurred. This can help rule in or rule out potential exposures. To calculate the period of exposure, you need to know the onset date, pathogen and the incubation period for the pathogen.

To calculate the period of exposure, use the incubation period for the known pathogen to walk backwards from the onset date.

Step 1: From the onset date, count back the minimum incubation period for hepatitis A. This is the last date in the period of exposure.

Step 2: From the onset date, count back the maximum incubation period. This date is the first date in the period of exposure.

Step 3: From the onset date, count back the average incubation period. This is the median date of exposure.

This table highlights how incubation period and period of exposure can be used during outbreak investigations:

Do you know the ...?				
Pathogen?	Date of exposure?	Onset date?	Incubation Period or Period of exposure?	Reported as:
No	Yes	Yes	You can calculate an incubation period to help determine what the pathogen might be.	Hours or days
Yes	No	Yes	You can calculate a period of exposure to help determine when the exposure might have occurred.	A range of dates

Question 8: What is the period of exposure for patient A? Note: Patient A had an onset of 7/18/17. [Domain 6: Biosurveillance]

Answers:

- *Period of exposure: May 28- July 2*
 - *Earliest exposure date: May 29.*
 - *Median exposure date: ~June 20.*
 - *Latest exposure date: July 2.*

Question 9: Considering the possibility that the ARC potlucks may be the exposure location, which Friday potluck dates are possible sources of exposure? [Domain 6: Biosurveillance]

Answers: *June 2, June 9, June 16, June 23, June 30*

An **outbreak threshold** is the point at which epidemiologists and investigators see an increase in disease and no longer consider them to be sporadic and unrelated. This threshold may prompt changes in approaches used to slow disease spread, such as adjustments to exclusion rules or the implementation of prophylactic measures.

Question 10: Discuss whether or not this is an outbreak. [Domain 6: Biosurveillance]

Facilitator: *Encourage use of the outbreak threshold guide.*

Disease/Condition	Outbreak Means	Reporting by *HCPs, HCIs, and CFs
Amebiasis	Diagnosis or detection of 2 or more cases, not from the same household or family, within a 2-week period	X
Campylobacteriosis	Diagnosis or detection of 3 or more cases, not from the same household or family, within a 1-week period	X
Conjunctivitis: acute	An unexpected increase based on clinical or professional judgement and experience	X
Cryptosporidiosis	Diagnosis or detection of 2 or more cases, not from the same household or family, within a 1-week period	X
Diarrhea, Nausea or Vomiting	An unexpected increase based on clinical or professional judgement and experience	X
Diphtheria	Diagnosis or detection of 1 or more cases confirmed by the Arizona State Laboratory within a 7-day period	X
Enterotoxigenic or Enterohemorrhagic <i>Escherichia coli</i>	Diagnosis or detection of 2 or more cases, not from the same household or family, within a 1-week period	X
Giardiasis	An unexpected increase based on clinical or professional judgement and experience	X
<i>Haemophilus influenzae</i> , type B	Diagnosis or detection of 1 or more cases confirmed by the Arizona State Laboratory within a 14-day period	X
Hepatitis B	Diagnosis or detection of 2 or more confirmed, epi-linked acute cases, within a 5 month period	X
Hepatitis A	Diagnosis or detection of 2 or more cases, not from the same household or family, within a 2-week period	X

Answers:

- Yes, this IS a hepatitis A outbreak. [Correct answer based upon currently available information.]
 - There are 2 or more cases that are from the same household, BUT, there are other clinically compatible cases who would meet the confirmed case definition based upon symptoms and epidemiologic link.
- No, this is NOT a hepatitis A outbreak. [Incorrect answer]
 - If someone gives this answer it may encourage discussion of the need for further testing/additional information to make this determination. They may give this answer because the two laboratory confirmed cases, Patient A and B, are father/daughter, who live in the same household, without considering the sick contacts who would be epi-linked confirmed.

Question 11: Who should we notify at this point? What additional Information can we get from infection preventionists? [Domain 3: Information Management]

Answers:

Notifications:

- State health department/ADHS.
- Immunization department.
- Nearby hospitals to check for additional cases.
- Leaders in their health jurisdiction.
- Local public information officer (PIO).
- Other refugee groups.
- Neighboring public health jurisdictions.
- Close contacts – [note: may bring up PEP discussion; if this does come up you can remind the group that this will be addressed further in Module 4]

Information from Infection Preventionists:

- *Onset dates.*
- *Signs/symptoms or chief complaint.*
- *Other lab tests ordered or completed.*
- *Past medical history.*
- *Vaccination history, if available.*
- *Any pertinent details listed in the medical record.*
- *Requesting additional tests, if needed, such as liver function tests.*

An additional refugee from ARC has been hospitalized due to illness, and infection preventionists are able to provide additional information on new and existing cases. Already reported cases are now confirmed based upon their having symptoms, jaundice and elevated liver enzymes. Additionally, onset dates are clarified from the hospital records. These are noted in the updated line list.

The ARC director provides information on employment for those on the line list, and none of the cases are employed in healthcare, child care or food handling.

Patient ID	Age	Gender	Onset Date	Symptoms	County of origin	Arrival date in the U.S.	Hospital	Lab results	Notes
A	22	F	7/18/17	Diarrhea, fever, jaundice	Sudan	1/28/2017	Hospital A	IgM+	-Daughter of Patient B -CONFIRMED
B	46	M	7/17/17	Vomiting, elevated liver enzymes	Sudan	4/28/2017	Hospital A	IgM +	Father of Patient A -CONFIRMED
C	30	M	7/15/17	Fatigue, fever, abdominal pain, jaundice	Somalia	1/27/2016	Hospital B	IgM +	Boyfriend of Patient A -CONFIRMED
D	60	F	7/16/17	Vomiting and diarrhea	Somalia	5/6/2005	Not hospitalized	Not tested	-Not tested for hepatitis A; illness resolved in 24 hours. -Not a case
E	55	F	7/15/17	fever, abdominal pain, vomiting, elevated liver enzymes	Democratic Republic of Congo	4/21/2010	Hospital A	IgM +	-Dines with Patient F during the week on occasion -CONFIRMED
F	50	M	7/18/17	fever, abdominal pain, jaundice	Sudan	2/5/2008	Hospital B	IgM +	-Dines with Patients A, B and E on occasion during the week. -CONFIRMED
G	45	F	7/16/17	Abdominal pain, fatigue *case has a history of hepatitis B infection (most likely acquired in country of origin)	Somalia	1/4/98	Not hospitalized	Not tested	-Very distrustful of doctors -will not see a provider or talk with public health, according to ARC director -Case classification TBD

Question 12: Would you recommend testing for the symptomatic individuals who were not seen by a medical provider? Why or why not? [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answer: *There are no right or wrong answers, just an area for discussion.*

- YES
 - *To identify if their illness was actually caused by hepatitis A.*
 - *To find cases and conduct active surveillance.*
 - *To determine if there is ongoing transmission.*
 - *To have specimens to send to CDC for genotyping, which can confirm whether or not the cases are genetically related.*
- NO
 - *Symptomatic contacts will be confirmed cases anyway*
 - *The hepatitis A case definition defines “A case that meets the clinical case definition and occurs in a person who has an epidemiologic link with a person who has laboratory-confirmed hepatitis A (i.e., household or sexual contact with an infected person during the 15-50 days before the onset of symptoms)” as CONFIRMED.*
 - *Hepatitis A has many false positive results and this may muddy the waters.*
 - *They are no longer infectious based on their onset.*
 - *The symptoms of hepatitis A, aside from jaundice, are often challenging to differentiate from other enteric infections.*

Question 13: What resources are available for individuals in your health jurisdiction who do not have health insurance or access to a primary care provider? [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answers: *This will vary based upon jurisdiction and applicability to participant role.*

MODULE 2

Part 1: Interviews begin

Facilitators: *Provide participants with a standard questionnaire for hepatitis A (handout 6).*

Case count: 5 confirmed, 1 unknown, 1 ruled out

You begin arranging interviews for cases at the refugee clinic. You have run into two problems: there are very few questions assessing food exposures on the existing hepatitis A questionnaire, and there are language barriers. For the time being, until a more intensive questionnaire can be created, your team continues to administer the standard hepatitis questionnaire for all cases, adding a potluck and group meal-focused food history dating back to 50 days before the case's symptom onset. ARC staff is able to assist in providing translation for both Arabic and Somali interviews. Interviews are conducted in person, when possible.

With this help of translators, you conduct four food history questionnaires for confirmed cases of hepatitis A. One person, Patient E, is lost to follow up and unable to be interviewed. Given that the average incubation period of hepatitis A infection is 28 days (15-50 days), you ask the communicable disease investigators to record any food items eaten in the 50 days before onset, including from restaurants, at home and at weekly potlucks. Now that you have made contact with additional cases, you once again ask if they have any record of food served at potlucks, but no one seems to know for sure.

Question 14: What resources are available in your jurisdiction for communicating with non-English speakers? If so, how are they accessed? [Domain 3: Information Management]

Answer: *Answers will vary by jurisdiction and role.*

Question 15: During foodborne outbreaks with potlucks or catered events, what are some ways to identify foods that were served? [Domain 6: Biosurveillance]

Answers:

- *Ask both ill and well persons what they ate at potlucks.*
- *Ask if people remember other items that were available at the potluck that they did not eat.*
- *Ask what they, their family member, or friends contributed to the potluck.*
- *Ask if there are any items that are always available at the potluck.*
- *Ask individuals to check their social media for pictures of foods available and/or consumed.*

Question 16: What are the benefits and disadvantages of talking to potluck attendees who did not become ill? [Domain 6: Biosurveillance]

Answers:

Benefits:

- *May provide a clearer picture of which foods to consider potential sources of infection and which ones to rule out.*
- *May provide a broader list of foods available to potluck attendees.*

Disadvantages:

- *It is possible that well persons may have eaten the contaminated food, but did not become sick.*
- *It can be challenging to convince well persons of the importance of participating in these questionnaires.*

You discuss conducting a case-control study, where exposures from ill persons would be compared with the exposures from well persons. The well persons would likely be potluck attendees who did not become ill. Both ill and well potluck attendees would be provided with a list of all available food and drinks, and asked to report which ones they consumed. This type of study can help identify which food or drinks were most likely to be eaten by ill persons, and potentially the source of the outbreak.

Inject: Three of the cases with completed food histories reported dining at the potluck weekly, one did not. She works every Friday night so is never able to attend the potlucks. She believes she consumed leftovers that were brought home by her son, but was not sure.

Patient A Jaundice onset date: July 17	Patient B Jaundice onset date: July 18	Patient C Jaundice onset date: July 18	Patient F (did not attend potluck) Jaundice onset date: July 17
<ul style="list-style-type: none"> • Rice and beans • Cabbage • Goat stew • Whopper and fries • Fruit salad • Moukhbaza (Sudanese banana dessert) • Berry smoothie • Aseeda (Sudanese porridge) 	<ul style="list-style-type: none"> • Dried fish • Rice and Beans • Okra • Fruit salad • Banana • Chicken salad • Moukhbaza • Mango smoothie • Rice and beans • Roasted chicken 	<ul style="list-style-type: none"> • Cabbage • Rice and beans • Tropical smoothie • Yogurt • Apple • Ham sandwich • Chicken wings • Potato wedges • Chicken sandwich and fries 	<ul style="list-style-type: none"> • Kissra (Sudanese fermented bread) • McDonalds – Filet o’Fish and fries • Strawberry smoothie • Cheerios • Milk • Cabbage • Moukhbaza • Goat stew • Pasta salad

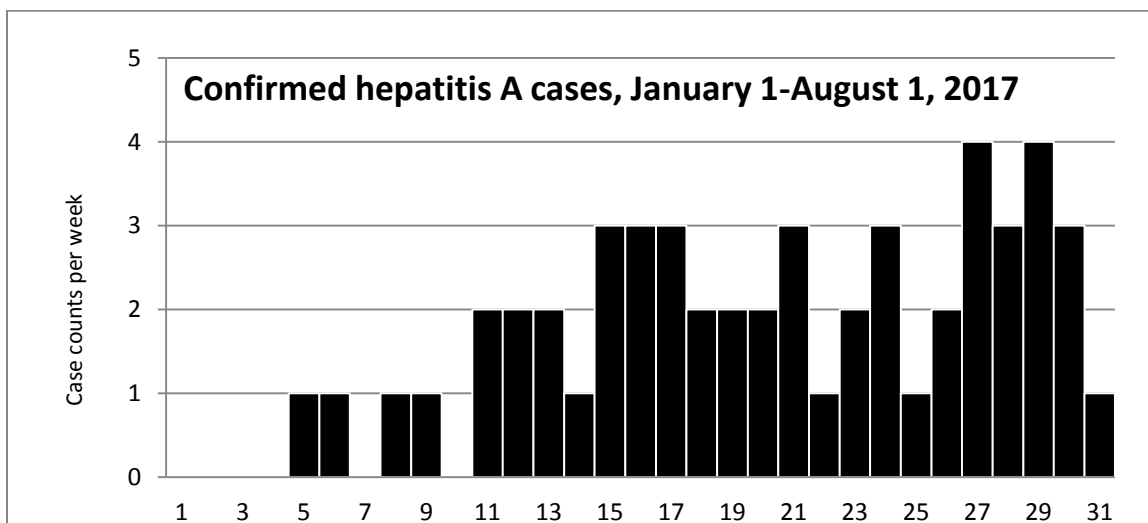
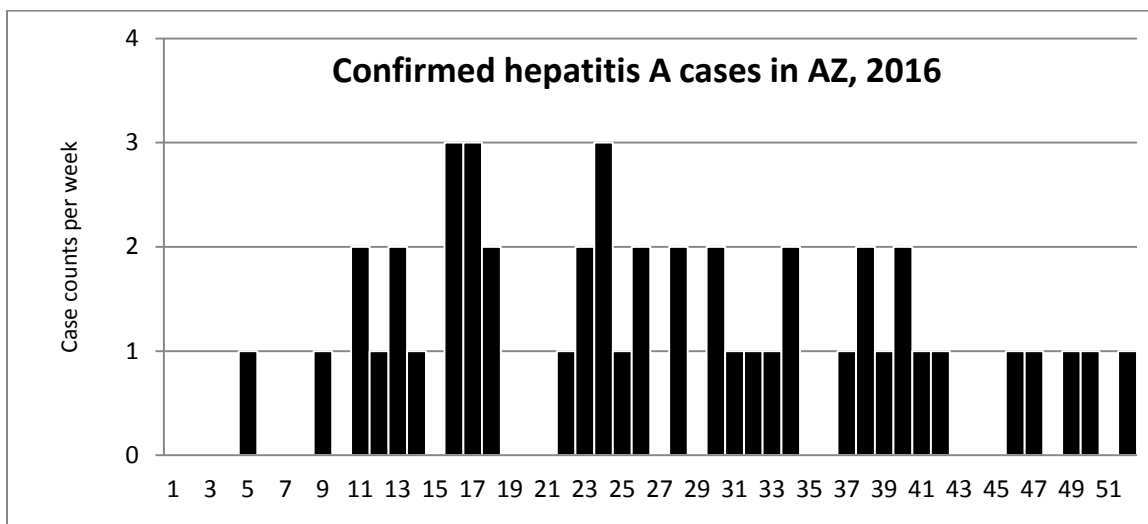
During the case interviews, you learn about an additional three clinically compatible contacts that have not been reported by ARC. These cases are counted as epi-linked confirmed cases, though it is unclear whether they are primary or secondary. Furthermore, it remains unclear whether this outbreak is due to a contaminated food item or an ill food handler. You decide to consult the state health department to see if their outbreak is isolated or more widespread. They will determine whether to conduct an epidemiological study once armed with this information.

Case count: 9 confirmed cases (5 via laboratory testing, 4 epi-linked), 1 ruled out

Part 2: The outbreak grows

August 1, 2017

ADHS reports that the number of confirmed hepatitis A cases is beginning to rise across the state, with most counties experiencing higher-than-expected rates of hepatitis A. Compared to 47 cases in all of 2016, the state has seen 53 confirmed cases of hepatitis A since January 1, 2017. Of these, 24 cases have occurred since June 1, 2017.



You have been tasked with expanding the standard questionnaire to assess for food exposures that can be used to interview all confirmed cases of hepatitis A statewide and within the refugee population. Alongside the new questions, you continue to ask the questions from the standard questionnaire including:

- Place of birth.
- Reason(s) for testing.
- Clinical symptoms and liver enzyme test results.
- Vaccination history.
- Liver enzyme test results.
- Sick contacts/High risk contacts.
- Travel.
- Sexual contacts.
- Drug use.
- Exposure to needles via dental work, tattooing, acupuncture or other needle sticks.

Facilitator: *provide participants with a list of foods linked to hepatitis A outbreaks in the past (handout 7).*

Question 17: What food or drinks would you like to include in this questionnaire? Are there any special considerations to be made for the refugee community? [Domain 6: Biosurveillance]

Answers: *There is no right or wrong answer, rather this is more intended to evoke discussion.*

However, here are some tools they can use to help focus their thought process:

- *Participants can use the list of food vehicles for past outbreaks (past hepatitis A outbreaks have implicated: strawberries, pomegranate seeds, grapes, salsa, sandwiches, sushi, green onions, crab, deli meat, coleslaw, milkshake, oysters, lettuce, and vegetables)*
- *Can use existing epi-data collected from cases (though only a small sample) for refugees (see page 26).*

Facilitators: *Provide participants with the extended questionnaire (handout 8).*

Question 18: Should the refugee outbreak be considered part of the statewide outbreak? Why or why not? [Domain 6: Biosurveillance]

Answers:

- Yes
 - *This may be due to a common food item that begins circulation in the state in early June.*
- No
 - *The refugees are a unique population that has different exposures and considerations.*

Part 3: Calling in reinforcements

Your jurisdiction begins using the newly created hepatitis A questionnaire to interview all confirmed cases. Moving forward, refugee case counts are included as part of the statewide outbreak until more definitive exposures are discovered.

Inject: You learn from the refugee agency that another refugee complaining of fever and vomiting has been volunteering at Hospital C as a clown in the pediatric unit, sometimes making shaved ice slushies with the patients. He appears to be jaundiced, but has continued to volunteer. [Note: Most (70%) children younger than 6 years infected with hepatitis A are asymptomatic.]

Question 19: What information should be shared with hospital C? [Domain 3: Information Management]

Answers:

- *The refugee's name and date of birth.*
- *Date of onset so that infectious period can be targeted.*
- *Dates the case was volunteering at the hospital, if available.*

Question 20: What are the next steps and responsibilities 1) public health; 2) the hospital and 3) environmental health? [Domain 3: Information Management, Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answers:

- *Public health:*
 - *Exclude case until they are no longer symptomatic*
 - *Facilitators: prompt group to specify when cases are infectious-seven days after onset of jaundice or two weeks after onset of initial symptom.*
 - *Provide education on hepatitis A signs/symptoms, infectious period and prevention measures.*
 - *Assess for close and household contacts, recommending prophylaxis/vaccination* as applicable.*
- *Hospital*
 - *Enforce exclusions for the volunteer if they are still infectious, based upon health department recommendations.*
 - *Assess for contacts who would be candidates for prophylaxis or vaccination, particularly those who are at high risk of infection and poor outcomes (young, old, immunocompromised, those with chronic liver conditions).*
 - *Check the vaccination status of staff and other contacts.*
 - *Provide messaging to staff and volunteers about the exposure and future recommendations.*

- *Environmental Health*
 - *Inspect the kitchen/food service area of the hospital, if applicable.*
 - *Collect information on the food permit of the slushy company, if contracted by the hospital.*
 - *Inspect the slushy company to ensure the operation is limiting bare hand contact with ready to eat foods, if applicable.*
 - *Ensure that food handlers are properly trained and permitted.*

** Facilitator: let participants know prophylaxis and vaccination will be discussed further in Module 4.*

As the state begins to look more closely at reported cases of hepatitis A, it is discovered that four individuals attended a summer ceremony hosted by the Southwest Desert Indian Community Center from June 19-21, 2017. The four identified cases reside in four additional counties, but none live on tribal lands.

Food served at the ceremony was prepared mostly by an organizing committee, though people attending the ceremony may have also brought their own food.

The following food items were prepared by the organizing committee:

- Dried meat
- Stew made with beef that was butchered by a private individual
- A traditional dish made with corn and squash
- Salad made with corn, spicy peppers, frozen berries, wild rice, and cilantro
- Pudding made with frozen berries
- Teas made with traditional healing herbs
- Water

Tribal and county investigators work together to identify which committee members helped prepare which foods. Committee members were each assigned one dish, and they were responsible for obtaining ingredients for and preparing their assigned dish.

There are concerns that additional cases from the ceremony may be living on tribal lands.

Question 21: (for tribal participants): How would tribal communities work to notify their healthcare partners? What would case finding look like in your jurisdiction? [Domain 3: Information Management, Domain 6: Biosurveillance]

Answers: *Answers will vary by jurisdiction.*

Question 22: (for non-tribal participants): What mechanisms do you have in place in your jurisdiction to communicate with tribal partners? What does this look like? [Domain 3: Information Management, Domain 6: Biosurveillance]

Answers: *Answers will vary by jurisdiction.*

Facilitators: Ask tribal partners if there are other/better ways they'd like to be contacted.

Question 23: Would you consider standing up your Emergency Operations Center (EOC) at this time? Why or why not? If no, what threshold would prompt you to activate the EOC? [Domain 2: Incident Management]

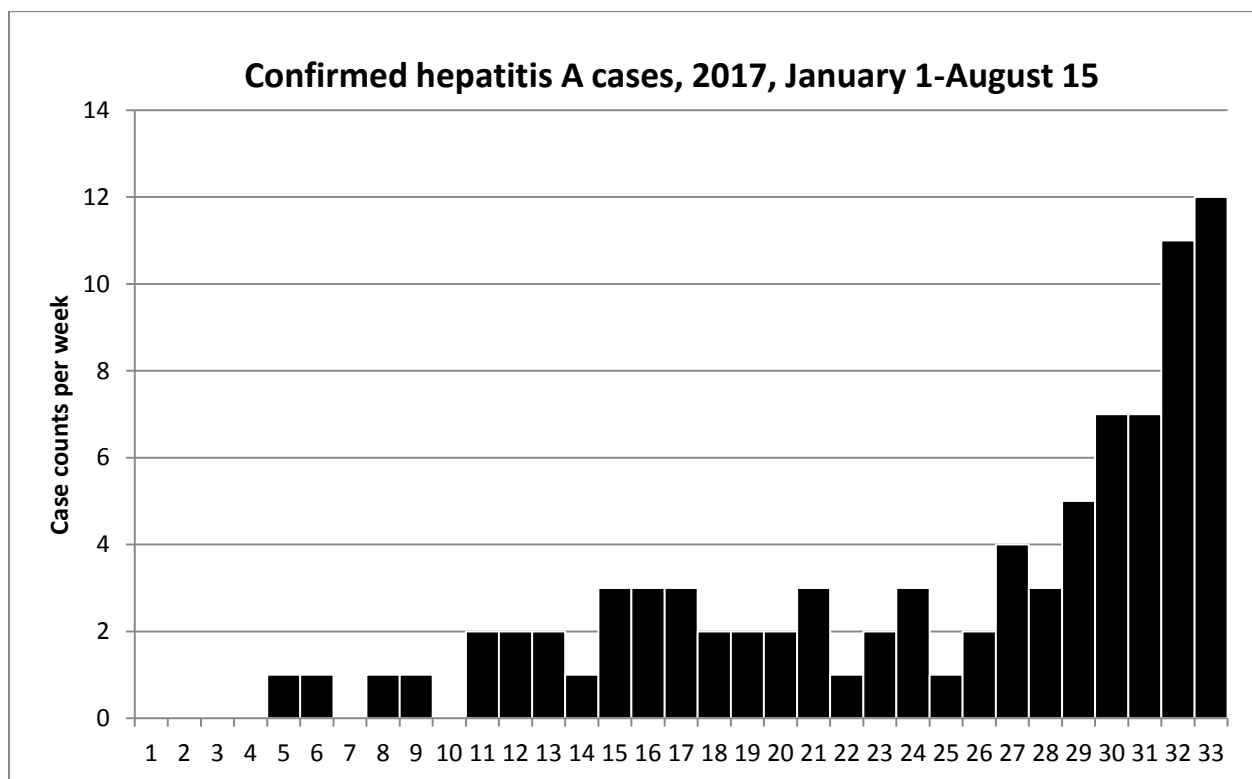
Answers: *Answers will vary by jurisdiction and role.*

MODULE 3

Part 1: Analyzing epidemiological data

August 15, 2017

Across the state, 34 additional confirmed cases have been reported since August 1, 2017, bringing the state's year to date count to 87. Six of these cases are associated with the refugee outbreak (15 total), seven are tribal (all associated with the ceremony), and the rest are not linked to a particular community, organization, or event. Data are analyzed for cases across the state since June 1, 2017 to include cases with the earliest onsets in mid-June.



Among the 76 cases:

- Median age of 23 (range 4 to 76)
- 53% Female
- 57% hospitalized
- 0 deaths
- 29% travel to Mexico
- 37% are Hispanic

Commonly reported food items:

Food item(s)	Number (%) reported by community members (n=68)	Number (%) reported among refugee cases (n=13)	Number (%) reported by tribal associated cases (n=6)	Number (%) reported by all hepatitis A cases reported since June 1, 2017 (n=87)
Tomatoes	50 (74)	5(39)	3(50)	58(67)
Salsa	32 (47)	2(15)	2(33)	36(41)
Lettuce/Leafy Greens	24 (35)	3(23)	2(33)	29(33)
Avocado/Guacamole	16(23)	1(10)	2(33)	19(22)
Green onions	13(19)	2(12)	2(33)	17(20)
Cucumbers	24(36)	2(17)	1(17)	27(31)
Corn	33(49)	5(35)	3(50)	41(47)
Grapes	24(36)	4(27)	3(50)	31(36)
White or yellow onion	32 (47)	9(71)	4(67)	45(52)
Fresh cilantro	15(22)	5(36)	2(33)	22(25)
Strawberries	25(37)	6(43)	3(50)	34(39)
Blueberries	20(29)	4(32)	1(17)	25(29)
Blackberries	15(22)	2(14)	1(7)	18(21)
Frozen berries	24(36)	4(27)	2(33)	30(34)
Ice cream	35(52)	2(14)	3(50)	40(46)
Chicken (home or away)	52(76)	9(73)	4(67)	65(75)
Beef (home or away)	51(75)	9(72)	5(83)	65(75)
Deli meats (home or away)	32 (47)	5(37)	3(50)	40(46)

In addition to the epidemiological data obtained from case interviews, other tools are available to help make sense of these data. CDC's Foodborne Diseases Active Surveillance Network, or FoodNet, is a program in 10 states intended to produce national estimates of the burden, trends and sources of foodborne illness in the United States. One of FoodNet's projects is a population survey. In this survey, respondents are asked about recent gastrointestinal illnesses, travel, and high-risk foods consumed in the past seven days. These data are used to provide food consumption background rates, and are often used during enteric disease outbreaks to determine whether the frequencies of food items reported by cases are higher than expected. In addition, Arizona has been conducting an online survey called Food, Animal and Water Exposure Survey (FAWES), which provides localized statistics about consumption patterns for Arizona residents.

Food Item	Persons reporting consumption during exposure period (all cases reported since June 1, 2017) No. (%) (n=87)	Persons reporting consuming food in the past 7 days (%), FAWES Data (n=7,345)	FoodNet Population Survey Persons reporting consuming food in past 7 days (%)
Tomatoes	58(67)	43	59.6
Salsa	36(41)	25	27.8
Lettuce/Leafy Greens	29(33)	28	39.6
Avocado/Guacamole	19(22)	36	27.1
Green onions	17(20)	19	29.6
Cucumbers	27(31)	39	46.9
Corn	41(47)	27	41.5
Grapes	31(36)	5	34.5
White or yellow onion	45(52)	41	71.3
Fresh cilantro	22(25)	22	17.0
Strawberries	34(39)	10	45.0
Blueberries	25(29)	5	22.3
Blackberries	18(21)	3	7.3
Frozen berries	30(34)	7	13.3
Ice cream	40(46)	18	59.2
Chicken (home or away)	65(75)	20	55.8
Beef (home or away)	65(75)	22	39.8
Deli meats (home or away)	40(46)	8.5	34.95

Question 24: Based upon these initial patterns, what are your hypotheses about the sources of illness? [Domain 6: Biosurveillance]

Answer: There aren't necessarily right or wrong answers here, but participants can be reminded to use their resources including a list of past outbreaks, the investigation manual and the table above.

Note: Food exposure rates vary between the FAWES and FoodNet Population Survey. There are a number of possible explanations for these differences: regional differences in food preference, sampling methodology, changes in food consumption over time (if FAWES is more recent), differences in food preferences between people who respond to online or phone survey. It is worth considering both sources of data when looking at food exposures.

Question 25: At this point, who would you consider notifying? [Domain 3: Information Management]

Answers:

- *ADHS could notify CDC.*
 - *CDC may contact FDA (produce), USDA and/or Arizona Department of Agriculture (meats).*
- *ADHS could reach out to partners in other states, particularly those nearby, to see if they have an increase in hepatitis A cases.*
- *Updated notifications to PIOs and local health jurisdiction leaders.*
- *Local clinics and hospital IPs*
 - *Increase awareness of cases, encourage testing of symptomatic individuals and remind them that hepatitis A is reportable.*
- *Environmental Health*
 - *They may consider reminders to restaurants during routine inspections about staying home while ill and the importance of hand washing.*

Question 26: Would you consider shortening the questionnaire in order to narrow the focus and reduce the burden on investigators? What are the pros and cons of shortening the questionnaire? [Domain 6: Biosurveillance]

Answers:

Pros:

- *Cases have an easier time completing the interview and may not become as fatigued with a shorter questionnaire.*
- *Shorter interview forms with fewer open-ended questions can be helpful for less experienced interviewers, who might be called in to help during an outbreak.*
 - *However, more detailed interview forms with closed-ended questions can also be helpful for less experienced interviewers. Shortening the form may lead to less fruitful interviews if interviewers are less experienced.*

Cons:

- *Risk missing the common exposure, if we are wrong about the exposures we're considering.*

You decide to leave the questionnaire as-is, considering there is not a highly suspected food item.

A **secondary case** is one who reports a close contact with clinically compatible illness, and the close contact had illness onset first.

Question 27: When interviewing secondary cases, do you include their epidemiological data in the analyses? [Domain 6: Biosurveillance]

Answers:

- *No [preferred answer]: Their exposures may cloud the data and lead to inaccurate conclusions.*
- *Yes: They should be included because they may have the same exposure as the primary cases, especially if they are part of the same household.*
 - *Note: for secondary cases that have very close contact (i.e., household) and onset dates, it may be difficult to determine whether a case is primary or secondary.*

Because the secondary cases are less likely to have had the same exposure as the primary cases, secondary cases are asked for a food history, but removed from the statistical analyses to test the relationship between exposures and illness.

Part 2: Teaming up with environmental health

Late afternoon on Friday, August 18, the data become clearer. Five cases mention eating food from various food trucks, and live in three different counties. They report consuming chicken and beef tacos, chicken and beef burritos, salsa, guacamole, various unknown ice cream flavors, smoothies, and pizza. You decide to call these cases back to find out more information, and discover they all attended a Summer Sun Festival in Phoenix. Because many of these food items overlap with exposures mentioned by cases statewide, notably tomatoes, lettuce, salsa, guacamole/avocados and berries, you choose to look into the food trucks more closely. Several cases mention consuming fruit smoothies at the event but, unfortunately, none of the cases can remember the name or flavor of the smoothie they consumed. It is also noted that the smoothie truck was giving out samples to anyone who passed by.

You speak with environmental health to provide this update and they spring into action, requesting permits, inspection and menu information for all trucks that were vending at the Summer Sun Festival. A voicemail is left for the event coordinator on Friday afternoon, but she doesn't call back until Tuesday morning (August 22). A list of all food trucks is provided by Thursday morning (August 24). The 12 food trucks in attendance are permitted in four different counties, which delays the process even more. All menus are provided to epidemiology on Friday, August 25, a week after the discovery of the food truck commonality. Once received, you review menus for trucks that serve the commonly mentioned food items above.

Question 28: What are the challenges for environmental health to obtain this information in a timely manner? How would you communicate with epidemiologists? Is this what epidemiologists would want? Would this be timely? [Domain 3: Information Management, Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answers: This will vary by jurisdiction and role. Possible topics of discussion topics include: seasonality of special events, how special events coordinators work, and challenges in getting complete information.

- *Events are required to have an event coordinator who would be the point of contact if environmental health has questions. These event coordinators are required to register their event and maintain a master list of all food vendors present at events.*
 - *Despite this requirement, it is possible that food vendors are present at events that have not been reported to environmental health by the event coordinator.*
- *The burden of special events may vary by seasons. Counties with milder winters tend to have more events then; counties with milder summers will have their events during these times.*

Inject: One case calls back after reviewing their credit card receipts to report that the food truck that he ordered a smoothie from is called Smooth Operator.

Epidemiologists reach out to environmental health to request an inspection of Smooth Operator, which is conducted the next day. The inspection must be completed by the county that issued the permit.

Inject: EH discovers that Smooth Operator is permitted only in your county, but has been operating in a neighboring county. The commissary Smooth Operator uses is in your county.

A **commissary** is an approved, licensed commercial kitchen used by caterers, food trucks, and other food sellers. Multiple businesses often share a single commissary. Since food trucks often lack full kitchens, and much of the food preparation and dish cleaning is done in the commissary. All food trucks are required to work with a commissary and visit both before and after serving or selling food or drink. Other services offered by a food truck include: Food holding (refrigerators and freezers), sinks for sanitizing equipment and tools, potable water and ice and sewage disposal.

Question 29: What are the concerns with Smooth Operator traveling between counties? [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answer: Smooth Operator must obtain a permit from in county in which they are serving/selling food. Health concerns would include lack of access to an approved commissary in the county where they are serving food.

Question 30: What are the hazards of an unpermitted food truck? [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answers:

- *Not having the correct equipment to prepare food.*
- *Not holding food at the right temperature*
- *Inability to wash equipment and utensils correctly.*
- *There's no way to know if they are obtaining their food from an approved source and/or making food at home.*
- *No way to dispose of sewage.*
- *Unable to ensure that ice and potable water are from an approved source.*

Question 31: Does the neighboring county also need to do an inspection, since the food was sold in their jurisdiction? [Domain 3: Information Management, Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answer: No, but the neighboring county could initiate legal action against Smooth Operator to ensure they obtain the necessary permits before selling in the neighboring county again in the future.

Legal action could include a Cease & Desist, citation, or Notice of Violation. Some counties might just provide education and inform the operator of the importance of obtaining a permit ahead of time.

Question 32: What areas should the sanitarian's focus on during their inspection? [Domain 3: Information Management, Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answers:

- *Hand washing.*
- *No bare hand contact of ready to eat foods.*
- *Holding temperatures.*
- *Labeling of products (names, dates).*
- *Storage of products.*
- *Knowledge of foodborne illnesses and their prevention.*
- *Food from approved sources.*
- *Access to a permitted commissary and logs to verify activity.*
- *Collect menu and recipes.*
- *Consider collecting food samples (more on this later).*

Sanitarians find out that Smooth Operator has one employee, who is not the owner. The employee, Jeff O'Callahan, is 33 years old and is very surprised to see the inspectors. He is sipping smoothie he made at work when they arrive. He is observed not wearing gloves, and many of the surfaces are sticky from smoothie preparation. They decide to spend a few minutes talking to him about the operation to assess the level of active managerial control and to identify any food safety gaps in the operation.

Active managerial control is defined a comprehensive food safety system that includes operators and food service workers that have knowledge of food safety issues and are directly responsible for controlling foodborne illness risk factors that contribute to foodborne illness.

During the inspection, the inspectors (sanitarians) find out that Jeff stores most of the ingredients for the smoothies at his home and that the owner even bought him a reach-in freezer for storing frozen products. Jeff said it was easier to store the items at home than to visit the commissary every day, where he goes every other day to get fresh potable water for the mobile unit and to dump waste. Jeff said that is pretty much all that the commissary is used for. He reports rinsing off equipment and utensils throughout the day and then washes everything at home, at the end of the day, in his kitchen sink. He said he doesn't usually use sanitizer because the ingredients he uses are mostly fruit. He says he always uses gloves when handling food but can't seem to find any gloves when the inspectors ask him where they are located; he said he must have just run out. The inspectors also observe that the mobile unit does not have any soap or paper towels at the hand wash sink. Jeff said he must have forgotten the soap and paper towels at home.

Question 33: What is Jeff doing that could contribute to a foodborne illness? [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answers:

- *Possible bare hand contact (no gloves).*
- *Food not stored in an approved commissary.*
- *Equipment not washed correctly (no use of sanitizer).*
- *Possible illegal dumping of sewage if he does not visit the commissary daily, or whenever he operates.*
- *Inability to adequately wash his hands.*
- *Food stored in residential style equipment (at Jeff's home) might not be stored at correct temperature.*
- *Washing of equipment and utensils at his home, without sanitizer, and possible exposure to unknown contaminants (chemical, pets, etc).*

Question 34: What types of questions should be asked when speaking to Jeff? [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answers:

- *Describe hand washing procedures.*
- *What do you do when you are sick?*
- *What signs/symptoms of illness would stop you from working? Who is your backup?*
- *Where do you buy your ingredients?*
- *Do you keep any ingredients in your house?*
- *How do you handle perishable items?*
- *How do you monitor holding temperatures?*
- *Have you been trained as a food handler?*
- *Are you a certified food manager?*
- *Where is your permit?*
- *Do you use ice? If so, where do you get it?*
- *Do you follow set recipes each time you make smoothies?*

Question 35: What type of information should they provide to Jeff? [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answers:

- *Provide information on obtaining the correct permit(s) in all counties of operation.*
- *Hand washing information.*
- *Holding temperatures.*
- *Product labeling, if items are held.*
- *Information about when a re-inspection will be conducted.*

- *At the time of re-inspection, inspectors will verify whether Jeff has obtained sanitizer, sanitizer test strips, gloves, paper towels, soap, and to check on the commissary activity.*

Jeff initially denies any illness, but after further discussion reveals that he was sick for a week about two weeks ago. He reported vomiting, abdominal pain, and dark urine that lasted about a week. He reports being fully recovered now. He states that he doesn't have health insurance, and he didn't take any days off because he is trying to support his three young children at home. He never vomited inside the mobile unit and said he always washed his hands after vomiting.

Question 36: Do you test Jeff for hepatitis A? What are some of the pros and cons of testing food handlers? Should Jeff be working right now? [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answers:

Pros:

- *Testing can help provide a definitive diagnosis.*
- *Testing yields a specimen which can be helpful if genotyping is completed in order to determine a relationship to the outbreak.*
- *May be easier to put control measures into place.*
- *Rules out any other illnesses that could cause his illness, and better clarify the outbreak.*
- *May be simpler to give prophylaxis to contacts when he has a positive lab result*

Cons:

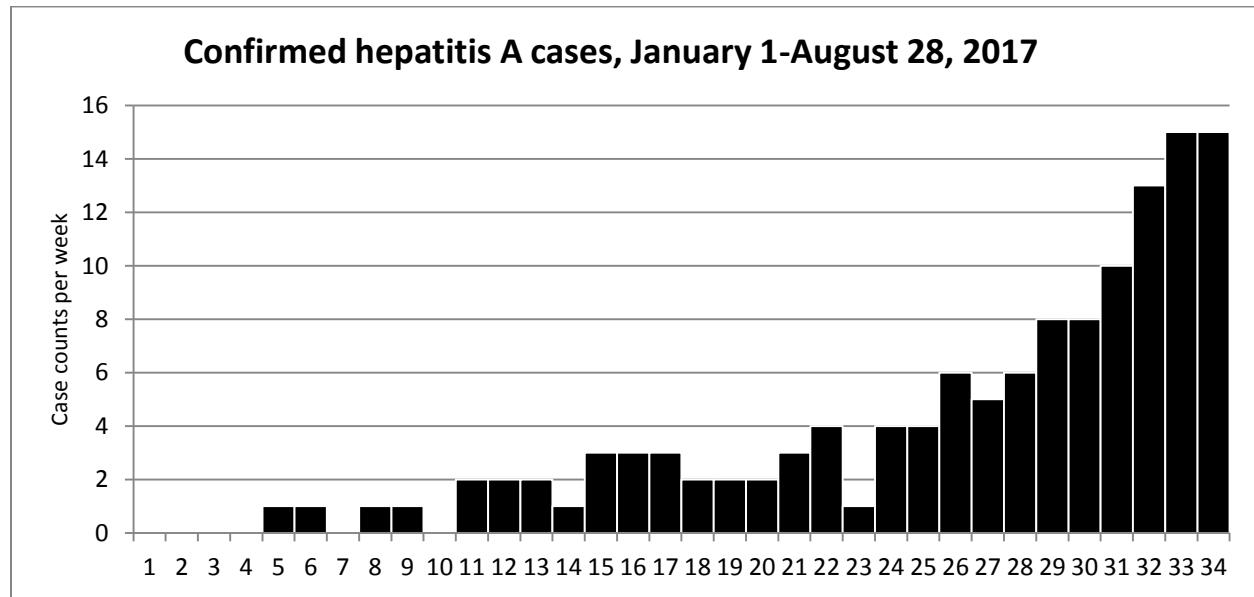
- *Testing cases may alienate them and reveal his identity to coworkers/others.*
- *No reason to test because he is already outside of the infectious period.*
- *Don't know whether he is the source of illnesses or he was sickened from a common source (we know he eats smoothies at work).*
- *If he tests negative, it may give him a false sense of security that he did not have Hepatitis A.*

Because Jeff is the only food handler employed by Smooth Operator, the county health department decides to test him. Because it has been two weeks since the onset of his illness, he is no longer infectious and is allowed to continue working. Sanitarians discuss the importance of hand washing and staying home while sick, and work with Jeff and the owner to correct the violations identified during the inspection.

Part 3: Laboratory testing

August 28, 2017

ADHS reports that there are now 128 confirmed cases of hepatitis A year to date, 99 of which have occurred since June 1, 2017 and are considered outbreak related.



Epidemiological evidence begins pointing very strongly towards smoothies, with 23 cases reporting exposure eating smoothies from Smooth Operator or at home. Among those who did not report exposure to Smooth Operator, frozen fruits are the most common ingredient mentioned. Within these cases, 83 (65%) report the consumption of one or more types including strawberries, blackberries, raspberries, blueberries, and pomegranate seeds. Epidemiologists begin interviewing cases using a focused questionnaire, which includes questions about smoothies, other products with frozen fruit and specific questions about meals from food trucks. Cases that report no exposure to frozen fruits, smoothies or food trucks are interviewed using the same extended questionnaire that has been employed throughout the outbreak.

August 29, 2017

CDC has notified ADHS of an increase in cases of hepatitis A nationwide over the past four weeks. There have been 11 states reporting an increase in hepatitis A cases of at least 40% over what they would expect to see. CDC has requested that states provide epidemiological data on what their cases report eating. ADHS provides this information to CDC. CDC encourages states to obtain product for testing and collecting shopper card records. Information is also shared with FDA.

August 30, 2017

A menu from Smooth Operator is studied to narrow the focus of the food items they will request for sampling.



Question 37: What steps should be taken before food samples are collected? [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answers:

- *Coordinate with ADHS before collecting and submitting samples.*
- *Find out how samples should be collected, the quantity of each sample, and how they should be stored in transit.*
- *Ensure adequate and proper sample supplies (media, sterile collection bags/cups, gloves, ice or gel packs).*
- *Obtain correct laboratory submission forms.*
- *Maintain a chain of custody for products collected.*

August 30, 2017

You request that environmental health submit the samples collected from Smooth Operator on the first visit and contact the Arizona Public Health Laboratory to inform them of the samples that will be arriving. During sample collection, Jeff, the employee at Smooth Operator, explains that they premix and portion frozen berry ingredients into small baggies. These baggies are stored in the freezer until the day before an event. Jeff reports that the owner purchases all of their frozen ingredients from Costco. Sanitarians take three pre-portioned bags of each flavor that are available and transport the frozen samples to the laboratory, on ice or with the use of frozen gel packs, by 3PM the same day. They submit all of their samples with corresponding laboratory submittal forms to document chain-of-custody was maintained throughout the sampling process.

The product samples arrived at the state laboratory, and the lab coordinates with FDA for a pickup. FDA must conduct this testing as Arizona's Public Health Laboratory is not approved to test the samples for hepatitis A.

Meanwhile, CDC reveals that 47% of the cases across the nation are reporting smoothies, frozen berries and other berry containing dishes. Many cases (61%) report shopping at Costco.

September 1, 2017

Results come back from FDA the following day. Three pre-mixed bags of smoothie flavors, Sweet Surprise, Amazing Apple and Cherry Chiller, are reported as CRO, or cannot rule out, and must have confirmatory testing conducted. The next day, the results are reported as positive, indicating that the berry samples are contaminated with hepatitis A. Unfortunately, because it is a mixed bag of berries that includes blackberries, apples, bananas, blueberries, cherries and pomegranates, the lab is unable to determine which exact berry was positive for the virus. These results are reported to CDC.

FDA suggests obtaining intact product samples in the original packaging. Other states are also working to obtain samples for testing.

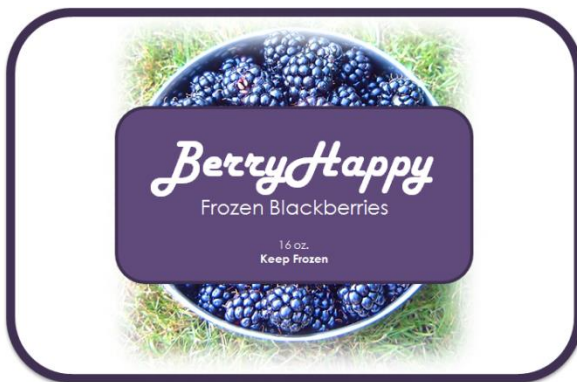
September 2, 2017

Environmental health contacts the owner of Smooth Operator and request an unopened bag of each berry type. All were purchased at Costco. On the same day, sanitarians visit a Costco store to collect samples for testing, as well as to collect invoices for berry products received since mid-May. Photographs of the collected product labels, SKUs, and best by dates are taken by sanitarians and provided to epidemiologists. These invoices are provided to FDA so they may begin trace back of products.

The following products were collected from Smooth Operator and Costco.

Berry type	Brand	Berry source
Blackberries	BerryHappy	Peru
Blueberries	BerryFull	Chile
Strawberries	BerryYummy	United States
Pomegranate seeds	BerryFresh	Egypt
Raspberries	BerrySafe	Mexico

The next day you are notified by FDA that the blackberries collected from both Costco and Smooth Operator come back positive for hepatitis A. The results are reported to CDC and state and local partners. FDA announces a recall of all BerryHappy blackberries on Tuesday, September 4. All best by dates are included in the recall. All distributors are instructed to remove the product from the shelves and consumers are warned to discard the product or return it to their point of sale.



MODULE 4

Part 1: Prevention of future cases

Inject: You have been asked to help coordinate prophylaxis and vaccination for exposed individuals.

Question 38: What factors should be considered about a case to help identify potential contacts? [Domain 4: Countermeasures and Mitigation]

Answers:

- *Sensitive occupations (child care, food handling, health care).*
- *Sexual partners.*
- *Household contacts.*
- *Needle sharing partners.*
- *Anyone who may have been exposed to the case's stool (e.g. caregiver for a child or adult in diapers).*
- *Any other close personal contacts.*
- *Travel history.*

Question 39: What is the recommended prophylaxis for hepatitis A (HAV)? Fill in the following table using pages 7-8 of the hepatitis A investigation manual: [Domain 4: Countermeasures and Mitigation]

	Age of Exposed Individuals		
	<12 months	12 months – 40 years	> 40 years
Documented as fully vaccinated			
Immune compromised			
Not immune compromised			

Answers:

	Age of Exposed Individuals		
	<12 months	12 months – 40 years	> 40 years
Documented as fully vaccinated	None	None	None
Immune compromised	IG (0.02 mL/kg)	IG (0.02 mL/kg)	IG (0.02 mL/kg)
Not immune compromised	IG (0.02 mL/kg)	Single-antigen HAV vaccine at age appropriate dose	IG (0.02 mL/kg)

Note: Persons administered IG for whom vaccine is also recommended for other reasons should receive a dose of vaccine simultaneously with IG.

Note: Per CDC, for persons aged 41 years and older, IG is preferred because of the absence of information regarding vaccine performance in this age group and because of the more severe manifestations of Hepatitis A in older adults. The magnitude of the risk of HAV transmission from the exposure should be considered in decisions to use vaccine or IG in this age group. Vaccine can be used if IG cannot be obtained.

Question 40: During what timeframe should prophylaxis be administered? [Domain 4: Countermeasures and Mitigation]

Answer: *Within two weeks (14 days) after exposure.*

Question 41: What information is necessary to obtain about contacts needing prophylaxis?
[Domain 3: Information Management, Domain 4: Countermeasures and Mitigation]

Answers:

- *Name of contact.*
- *Age/DOB.*
- *Gender.*
- *Weight.*
- *Contact info (phone, address).*
- *Language.*
- *Pregnancy status.*
- *Significant medical conditions (immune compromised, liver disease, blood clotting disorder).*
- *HAV vaccination status.*
- *Date of exposure to hepatitis A case.*
- *Type of exposure to hepatitis A case.*

Part 2: Putting it into action

Flash back: July 24, 2017

Think back to the refugee agency situation at the beginning of Module 1. In summary, there were five lab-confirmed cases of hepatitis A and one symptomatic untested cases when you first found out this was a hepatitis A cluster (on July 20 or 21).

Question 42: What prophylaxis recommendations would you have provided to the refugees at the time? Keep in mind that your cases may have prepared food for the ARC Friday potlucks and two potluck items (berry pudding and rice salad) contained frozen berries. [Domain 3: Information Management, Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answers:

- *Because there were a number of cases with onset on July 17 and 18, IG or vaccine should be provided as prophylaxis until July 31 and August 1, respectively, for household contacts.*
- *Continue to report new cases, who will be assessed for contacts. These contacts will be evaluated for IG or vaccine eligibility.*
- *Some refugees may have a history of hepatitis A infection as the disease is endemic in their country. With this, some may already be protected.*
 - *You may suggest that refugee health screening facilities either offer hepatitis A prophylaxis or draw titers on individuals from countries where hepatitis A is endemic.*

Flash back: July 10, 2017

Randall Boggs is a 38-year-old white male. His hepatitis A IgM + lab result was received by the health department on July 5, 2017 and is considered part of the statewide outbreak. The communicable disease investigator determined from medical notes that he was seen in the emergency department on July 2, 2017 with abdominal pain, malaise, fever, and jaundice. The medical notes do not indicate if he had diarrhea or his occupation. In a phone call with the case, the investigator determines that the fever, pain, and malaise started on July 1, 2017 and jaundice followed one day later. He is not sure when his jaundice resolved. He denies having diarrhea. Randall works at Salad World. He preps toppings for salad, including fresh veggies. He reports sporadically using gloves. He was on vacation during the week of June 19, then worked June 27, 29, and 30. He went to work on July 1 but left early because he was not feeling well. He has not yet returned to work.

Question 43: What is the infectious period for Randall Boggs? [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answer: *June 17, 2017 – July 15, 2017.*

Mike Wazowski is a coworker of Randall Boggs at Salad World. He worked on June 25, 26, and 27. He ate salads that Randall prepped on June 27. Mike does not know if he was vaccinated and can't find any vaccine records. He does not have symptoms. Mike Wazowski's wife, Celia, works in a child care facility where their daughter, Mary, also attends.

Question 44: When was the last known exposure for Mike Wazowski? Was that exposure within Randall's infectious period? [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answers: June 27, 2017. Yes, Randall's infectious period was June 17 – July 15.

Question 45: What is the last date that prophylaxis would be effective for Mike? [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answer: July 11, 2017. [Hint if group needs it: prophylaxis should be administered within 2 weeks of exposure.]

Question 46: Does Mike Wazowski need prophylaxis? What about his wife and daughter? Why or why not? Note: imagine today is July 10. [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answer: Yes, because he had high-risk exposure, the exposure occurred within the case's infectious period, and the prophylaxis window has not yet closed.

His family does not need prophylaxis, unless they also ate salads prepped by Randall. If Mike becomes ill, then his family would need prophylaxis.

Question 47: What steps need to be taken for the household contacts' child care facility? [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answer: If the household contacts are not symptomatic, then no action is necessary. Additional information about child care involvement can be found on page 10 of the investigation manual.

Question 48: How does your jurisdiction establish a prophylaxis clinic and obtain IG and vaccine? Describe any partnership with hospitals or other health care facilities. Describe any obstacles you foresee in this process. [Domain 3: Information Management, Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Answer: Answers will vary by jurisdiction and role. Note: Refer to pages 7-8 in the investigation manual.

Question 49: Past outbreaks have led to shortages in IG to be provided as post-exposure prophylaxis. How would you prioritize patients in the event this happened? [Domain 2: Incident Management, Domain 3: Information Management, Domain 4: Countermeasures and Mitigation]

Answers:

Those who would likely be prioritized include:

- *Very young.*
- *Very old.*
- *Those with immunocompromising conditions.*
- *Pregnant women.*
- *Individuals with diseases of the liver.*
- *Those who have consumed the implicated product within the past two weeks.*
- *Those working in food service, child care or healthcare settings.*
- *Users of recreational drugs.*
- *Men who have sex with men (MSM).*

Note: Vaccine is often recommended in lieu of IG when there are shortages.

Part 3: Messaging and communication

Inject: Timed with an ongoing vaccination/prophylaxis clinic, your health department is coordinating public messaging. You are asked to help coordinate the creation of a disease fact sheet, talking points, a web posting, and a press release.

A **disease fact sheet** is a stand-alone document providing information about the disease. It does not need to include information specific to the outbreak. It may already exist or may need to be modified only slightly.

Talking points are a bulleted list of basic messages about the outbreak and public health response. These are distributed to all who may receive inquiries about the outbreak from the public. Most of the public's questions can be answered in this document. More detailed questions can be fielded to the investigation team. There may be some information in talking points that are not released unless specifically asked for. Those being interviewed by the media can refer to talking points.

A **web posting** contains the same information as the talking points, formatted for the website.

A **press release** is issued by the public health agency and their public information officer to news organizations and is a method for educating the public. It should contain a simple summary of the situation and clear action items for the public. Media outlets use the press release to produce news stories.

All public messaging should be coordinated through a single designated point of contact, usually the public information officer (PIO). It is important to include the PIO on the investigation team to develop and review all public messaging.

Question 50: Who in your jurisdiction is responsible for public messaging? [Domain 3: Information Management]

Answer: Answers vary by jurisdiction, but should include the Public Information Officer (PIO), web administrator, and department management.

Question 51: List the information to be included in talking points and web posting. [Domain 3: Information Management]

Answers:

- *Case counts.*
- *Suspected source of the outbreak, if confirmed or supported with significant data.*
- *General information about hepatitis A (type of organism, signs/symptoms, incubation period, treatment, prophylaxis, prevention messages).*
- *What to do if you believe you are sick with hepatitis A.*

- *Who to contact with additional questions.*
- *What is being done to control the outbreak.*
- *Recall information, if available.*
- *Guidance on obtaining IG or vaccines.*
- *Possibly, locations where people may have been exposed by an ill food handler.*

Question 52: Much of the same information from web postings and talking points is the same as what would be included in a press release. Is there any information that should *not* be included in public messaging? [Domain 3: Information Management]

Answers: *These are all good discussion points, no right or wrong answers, necessarily.*

- *Product information if it is not confirmed.*
- *Identifying characteristics of cases or contacts.*
- *Locations of cases and contacts.*
- *Restaurants, child care center or healthcare center names where others may have been exposed.*

Question 53: Reporters are calling daily asking for the number of cases reported in your jurisdiction. Depending on when each reporter calls, sometimes you have different case counts at different times in the same day. How should you handle this? [Domain 3: Information Management]

Answer: *Answers will vary by jurisdiction and role. However, jurisdictions could consider updating and reporting case counts at set times each week (for example, each Friday at noon or Monday and Thursday at noon). This way, you are providing the same data to everyone. When different groups have different case numbers, the discussion becomes “why are the numbers different?” instead of promoting the disease control messages.*

Flashback: August 29, 2017

Recall that on this date, 65% of Arizona’s outbreak related cases reported consuming frozen berries in the 50 days before their illness began. CDC has also just notified ADHS of the increase in 11 others states. Despite this, no product has been tested yet.

Question 54: Your jurisdiction is feeling some pressure to put out a press release reporting the epidemiological link to frozen berries. What are the advantages and disadvantages of releasing information about the product? [Domain 3: Information Management]

Answers:

- *Advantages:*
 - *The public may feel more motivated to act if they feel they have specific information.*
 - *The public can more definitively determine their risk level.*
- *Disadvantages:*

- *Unnecessary fear or panic amongst the public.*
- *A negative effect on the brand(s) or similar products made by other companies.*

Inject: Following the product recall, some health departments want to put out the names of restaurants with ill food handlers and/or restaurants that are serving this product. Some health departments disagree with this decision.

Question 55: What are the advantages and disadvantages of releasing the names of the restaurants? How does this change if the window for prophylaxis is closed? [Domain 3: Information Management, Domain 4: Countermeasures and Mitigation]

Answers:

- *Advantages:*
 - *The public will have useful information to indicate whether or not they were exposed. Patrons would be able to seek out prophylaxis thus potentially preventing illness.*
- *Disadvantages:*
 - *Releasing the names of the restaurants will have a negative impact on the business, and possibly on the industry. This is particularly true if the business had proper procedures and practices in place but was the unfortunate recipient of contaminated product. This underscores the importance of having an adequate food safety system in place to minimize risks when contaminated product enters the establishment.*
 - *The public may be unnecessarily concerned if transmission risk at that restaurant was low.*
- *If the window for prophylaxis is closed, there may not be any public health advantages to naming the restaurant.*

Question 56: How could you address concerns about product being distributed nationally or multi-nationally? [Domain 3: Information Management]

Answer: CDC can liaise with other states and countries to identify potentially connected cases of hepatitis A. FDA can help identify where the product has been distributed.

Routine interviews by investigators throughout Arizona identify additional food handlers who worked during their infectious period. Below is a list of establishments where exposure may have occurred.

Question 57: Fill in the table with the food handler's infectious period and dates that the prophylaxis window closes. [Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Establishment Name	Food handler's onset date	Food handler's infectious period	Dates food handler worked (place an X next to the dates when the person was infectious)	When does prophylaxis window close for this exposure date? (If person was infectious, place an X next to dates that are STILL OPEN on 9/3)
Location A	7/15		July 29 July 30 July 31	
Location B	8/18		Aug 25 Aug 28	
Location C	8/13		Aug 14 Aug 25 Sep 1	
Location D	8/20		Aug 12 Aug 15 Aug 17	

Answers:

Establishment Name	Food handler's onset date	Food handler's infectious period	Dates food handler worked (place an X next to the dates when the person was infectious)	When does prophylaxis window close for this exposure date? (If person was infectious, place an X next to dates that are STILL OPEN on 9/3)
Location A	7/15	7/1 – 7/29	July 29 X July 30 July 31	Aug 12 Aug 13 Aug 14
Location B	8/18	8/4 – 9/1	Aug 25 X Aug 28 X	Sep 8 X Sep 11 X
Location C	8/13	7/30 – 8/27	Aug 14 X Aug 25 X Sep 1	Aug 28 Sep 8 X Sep 15
Location D	8/20	8/6 – 9/3	Aug 12 X Aug 15 X Aug 17 X	Aug 26 Aug 29 Aug 31

Flashback: September 4, 2017

Recall that BerryHappy blackberries have tested positive for hepatitis A and a product recall has been announced.

Inject: Most jurisdictions have agreed to issue joint public messaging.

Question 58: Fill in the following information. Use information from Module 3, and information from the table above. [Domain 3: Information Management, Domain 4: Countermeasures and Mitigation, Domain 6: Biosurveillance]

Press Release	
Arizona Department of Health Services and counties are investigating an outbreak of hepatitis A infections in the state. Investigators have identified [1] from [2] as the likely source of the ongoing outbreak.	
The product of concern is [3] [include details about where the product is sold, packaging and best-by date].	
The product has been recalled but may still be in freezers in retail establishments or individual homes. The public is advised to [4].	
The outbreak investigation is ongoing. While the original source of the outbreaks has been traced to this product, secondary sources of illness may exist. Individuals with hepatitis A can spread it to others.	
An employee of the following food establishments has been diagnosed with hepatitis A. Persons who have consumed food or drink products from these businesses during the identified dates should [5].	
Establishment Name	Dining Dates
[6]	[7]
[8]	[9]

Answers:

- (1) BerryHappy frozen blackberries
- (2) Peru
- (3) Sold at Costco with all best by dates.
- (4) Discard all recalled products or return to point of sale.
- (5) contact their healthcare provider to receive possible preventative care within 2 weeks of dining at the establishment **OR** Visit the health department vaccine clinic on [dates].
- (6) Location B
- (7) 8/25 or 8/28
- (8) Location C
- (9) 8/25

Question 59: Is this press release adequate? Anything more you would add/change in this press release? [Domain 3: Information Management]

Answer: Answers will vary by jurisdiction and role. There are no right or wrong answers.

This outbreak is declared over on December 14, 2017, 100 days (2 incubation periods) from the recall of the frozen blackberries. No hepatitis A cases have reported exposure to the frozen blackberries since the recall. A total of 117 cases are linked to the outbreak, and post-exposure prophylaxis was provided to 347 individuals throughout the state.

Jeff, the food handler from Smooth Operator, was visited for a re-inspection in late September, and he reports operating only in his permitted county since the last visit. Commissary records indicate he is visiting both before and after his shifts. He is observed wearing gloves, taking frequent hand washing breaks, and promises to never come to work sick again. He's had his three children vaccinated for hepatitis A. The business continues to thrive.

A total of 19 cases (16%) in this outbreak have tribal affiliation. This outbreak helped to strengthen and update contacts and relationships between tribal and county partners. This also underscored the importance of discussing travel and culture-specific foods and activities during enteric disease interviews.

Heightened surveillance for patients, staff and visitors of Hospital C was conducted for two incubation periods following the sick slushy server, and no clown-associated cases were reported.

APPENDIX A: INTERNET RESOURCES

Resource Title	Link
ADHS Foodborne Diseases homepage	http://azdhs.gov/preparedness/epidemiology-disease-control/foodborne/index.php
ADHS Hepatitis A homepage	http://www.azdhs.gov/preparedness/epidemiology-disease-control/hepatitis/index.php#a-home
ADHS Infectious Disease Investigation Manual	http://www.azdhs.gov/preparedness/epidemiology-disease-control/index.php#investigations-manual
ADHS Outbreak Threshold Guide	http://www.azdhs.gov/documents/preparedness/epidemiology-disease-control/disease-investigation-resources/outbreak-threshold-guide-schools.pdf
ADHS Food Regulations homepage	http://www.azdhs.gov/preparedness/epidemiology-disease-control/food-safety-environmental-services/index.php#az-food-safety-regulations
ADHS Food Safety homepage	http://www.azdhs.gov/preparedness/epidemiology-disease-control/food-safety-environmental-services/index.php
ASPHL Food Analysis Form	http://azdhs.gov/documents/preparedness/state-laboratory/public-health-microbiology/food-analysis-form.pdf
CDC Hepatitis A homepage	https://www.cdc.gov/hepatitis/hav/index.htm
CDC Hepatitis A Questions and Answers for Health Professionals	https://www.cdc.gov/hepatitis/hav/profresources.htm
CDC Foodborne Outbreak Online Database (FOOD Tool)	https://wwwn.cdc.gov/foodborneoutbreaks/
CDC Viral Hepatitis Serology Training	https://www.cdc.gov/hepatitis/resources/professionals/training/serology/training.htm
CDC Sources for IG and HBIG	https://www.cdc.gov/hepatitis/ig-hbig_sources.htm
Colorado Integrated Food Safety Center of Excellence homepage	http://www.ucdenver.edu/academics/colleges/PublicHealth/research/centers/foodsafety/Pages/default.aspx

Resource Title	Link
FDA Oral Learner Culture Project	https://www.fda.gov/food/guidanceregulation/retailfoodprotection/industryandregulatoryassistanceandtrainingresources/ucm212661.htm
FoodNet Population Survey Atlas of Exposures, 2006-2007	https://www.cdc.gov/foodnet/PDFs/FNExpAtl03022011.pdf

APPENDIX B: ACRONYMS

ADHS	Arizona Department of Health Services
ASPHL	Arizona State Public Health Laboratory
CDC	Centers for Disease Control and Prevention
CDI	Communicable Disease Investigator
FDA	U.S. Food and Drug Administration
HSEEP	Homeland Security Exercise and Evaluation Program
LHD	Local Health Department
SitMan	Situation Manual
SME	Subject Matter Expert
TTX	Tabletop Exercise

APPENDIX C: FDA FOOD CODE MOBILE FOOD ESTABLISHMENT MATRIX

This table is a plan review and inspectional guide for mobile food establishments based on the mobile unit's menu and operation. Mobile units range in type from pushcarts to food preparation catering vehicles.

To use the table, read down the columns based on the menu and operation in use. For example, if only prepackaged potentially hazardous food (time/temperature control for safety food) is served, then requirements listed in the **Potentially Hazardous (TCS food) Menu - *Prepackaged*** column apply. Likewise, if only food that is not potentially hazardous (time/temperature control for safety food) is prepared on board, then requirements listed in the **Not Potentially Hazardous Menu (TCS) - *Food Preparation*** column apply. Note that if a mobile food establishment has available for sale to the consumer both prepackaged potentially hazardous food (time/temperature control for safety food) and potentially hazardous food (time/temperature control for safety food) prepared on board, then the more stringent requirements of the **Potentially Hazardous (TCS) Menu - *Food Preparation*** column apply.

It is important to remember that mobile units may also be subject to all Food Code provisions that apply to food establishments. Consult the local regulatory authority for specific local requirements.

The local regulatory authority's decision to require auxiliary support services such as a commissary or servicing area should be based on the menu, type of operation, and availability of on-board or on-site equipment.

NOTE: The Food Code definition of "Food Establishment" does not include an establishment that offers only prepackaged foods that are not potentially hazardous (time/temperature control for safety foods).

FDA Food Code Mobile Food Establishment Matrix			
<i>Food Code</i>	<i>Potentially Hazardous Food (TCS food) Menu</i>		<i>Not Potentially Hazardous Food (TCS Food) Menu</i>
<i>Areas/Chapter</i>	<i>Food Preparation</i>	<i>Prepackaged</i>	<i>Food Preparation</i>
Personnel	Applicable Sections of Parts 2-2 - 2-4 5-203.11 (C)	Applicable Sections of Parts 2-2 - 2-4 5-203.11 (C)	Applicable Sections of Parts 2-2 - 2-4 5-203.11 (C)
Food	3-101.11 3-201.11-.16 3-202.16; Applicable Sections of Part 3-3; 3-501.16 3-501.18(A)	3-101.11 3-201.11-.16 3-303.12(A) 3-501.16 3-305.11; 3-305.12 (Applicable to Service Area or Commissary)	3-101.11; 3-201.11 3-202.16; Applicable Sections of Part 3-3

<i>Food Code</i>	<i>Potentially Hazardous Food (TCS food) Menu</i>		<i>Not Potentially Hazardous Food (TCS Food) Menu</i>
<i>Areas/Chapter</i>	<i>Food Preparation</i>	<i>Prepackaged</i>	<i>Food Preparation</i>
Temperature Requirements	3-202.11; Applicable Sections of Parts 3-4 & 3-5	3-202.11 3-501.16	NONE
Equipment Requirements	Applicable Sections of Parts 4-1 - 4-9 and 5-5	Applicable Sections of Parts 4-1 - 4-2; 4-6 and 5-5	Applicable Sections of Parts 4-1 - 4-2; 4-5 - 4-6 and 5-5
Water & Sewage	5-104.12 5-203.11(A) & (C) Part 5-3; 5-401.11 5-402.13-.15	5-104.12 5-203.11(A) & (C) Part 5-3; 5-401.11 5-402.13 -.15	5-104.12 5-203.11(A) & (C) Part 5-3; 5-401.11 5-402.13-.15
Physical Facility	6-101.11; 6-201.11 6-102.11(A) & (B) 6-202.15; 6-501.11 6-501.12; 6-501.111	6-101.11 6-102.11(A) & (B) 6-202.15 6-501.111	6-101.11; 6-201.11 6-102.11(A) & (B) 6-202.15; 6-501.11 6-501.12; 6-501.111
Toxic Materials	Applicable Sections of Chapter 7	Applicable Sections of Chapter 7	Applicable Sections of Chapter 7
Servicing	6-202.18 / As necessary to comply with the Food Code	6-202.18 / As necessary to comply with the Food Code	6-202.18 / As necessary to comply with the Food Code
Compliance and Enforcement	Applicable Sections of Chapter 8 and Annex 1	Applicable Sections of Chapter 8 and Annex 1	Applicable Sections of Chapter 8 and Annex 1